VAISH COLLEGE OF ENGINEERING, ROHTAK

TITLE: OBJECT IDENTIFICATION PROJECT

INTRODUCTION:

Object Identification is a process that enables a computer to detect and recognize different objects within images or videos. It works on the principle of computer vision and machine learning, where the system is trained using a dataset of labeled images. The model then analyzes new visuals, identifies the objects present, and marks them using bounding boxes. This project demonstrates how a trained model can recognize items like books, bottles, or pens in real time.

TECHNOLOGY USED:

Software:

- Python 3.8+ : Scripting language for backend, detection, web app
- Flask : Lightweight web framework (for UI and video streaming)
- HTML/CSS + JavaScript : Frontend UI (live video, controls, music player, styling)
- cyberpunk.mp3 : Background music (static file in /static folder)
- OpenCV (opencv-python) : Image/video processing, webcam access, annotation drawing
- Ultralytics YOLOv8 : Pre-trained object detection model (state-of-the-art computer vision)
- Pandas : Detection logging, CSV export
- NumPy : Image array processing (canvas creation, resizing)

Hardware:

- Laptop/PC: Runs Python and connects to a camera for processing and model execution.
- Webcam: Provides the video input required for real-time object detection.
- Projector: Used to display the output to a large group or during demonstrations

FUTURE SCOPE AND APPLICATIONS:

- Helpful in **security and surveillance systems** for identifying suspicious objects.
- Useful in **retail** for automatic product detection and inventory management.
- Can assist **visually impaired users** with object recognition through smart devices.
- Future work can include improving accuracy and deploying the model on mobile devices or IoT platforms.

TEAM NO. : 11

TEAM MEMBERS:

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